



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,269	05/22/2002	Peter Anthony Hulbert	3036/50901	1707

23911 7590 11/03/2005

CROWELL & MORING LLP  
INTELLECTUAL PROPERTY GROUP  
P.O. BOX 14300  
WASHINGTON, DC 20044-4300

EXAMINER

DEAN, RAYMOND S

ART UNIT PAPER NUMBER

2684

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/069,269

Applicant(s)

HULBERT ET AL.

Examiner

Raymond S. Dean

Art Unit

2684

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1 - 3 and 5 - 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 3 and 5 - 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 May 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, see amendment filed August 19, 2005 with respect to the rejection(s) of claim(s) 1 – 12 under 35 U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art Song (US 6,721,299) and Cedervall et al. (6,134,228).

Wallace teaches the use of a forward link signal, which is transmitted on a forward link channel, for the purpose of synchronizing base stations. The pilot symbols of that are transmitted on the forward channel provided said synchronization (See Column 7 lines 12 – 13, lines 54 – 67, Column 8 lines 1 – 12). Song teaches an RACH comprising pilot bits (See Figure 23H, Column 22 lines 59 – 67, Column 23 lines 1 – 3). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the RACH taught by Song as the forward link channel of Wallace thus enabling said pilot symbols to be transmitted and for the purposes of channel estimation and coherent detection as taught by Song.

Regarding Claim 12, Cedervall teaches a method of locating a mobile station within a telecommunications cell forming part of a telecommunications system (Figure 1A, Column 5 lines 54 – 56), the telecommunications cell comprising a base station and at least one mobile station (Figure 1A), the method comprising: determining the location of at least three base stations (Column 5 lines 57 – 67, Column 6 lines 1 – 19);

Art Unit: 2684

transmitting a signal from the mobile station; receiving the transmitted signal at each of the three base stations (Column 5 lines 57 – 67, Column 6 lines 1 – 19); comparing the received signals with timing signals in each of the base stations; and using the comparison at each base station to determine the location of the mobile station (Column 5 lines 57 – 67, Column 6 lines 1 – 19, lines 32 – 36).

Cedervall does not teach scheduling synchronization measurements for each of the base stations utilizing a random access channel.

Wallace teaches scheduling synchronization measurements for each of the base stations (Column 10 lines 28 – 36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the synchronization method taught above by Wallace in the wireless system of Cedervall as an alternative means for synchronizing the base stations of the wireless system as taught by Wallace.

Cedervall in view of Wallace does not teach scheduling synchronization measurements utilizing a random access channel.

Song teaches an RACH (See Figure 23H, Column 22 lines 59 – 67, Column 23 lines 1 – 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the RACH taught by Song as the forward link channel of Cedervall in view of Wallace thus enabling said pilot symbols to be transmitted and for the purposes of channel estimation and coherent detection as taught by Song.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al. (US 6,590,881) in view of Song (US 6,721,299).

Regarding Claim 1, Wallace teaches a method of providing synchronization between base stations in a telecommunications system (Column 4 lines 29 – 31, Column 5 lines 50 – 52), which includes a plurality of cells, each of which cells has one of said base stations and at least one mobile station (Figure 5, Column 9 lines 49 – 52, this system can be a UMTS system thus base stations (502, 504) will create cells with mobile stations (506) located in said cells), the method comprises the steps of: providing at least one channel for usage in the plurality of cells (Column 5 lines 50 – 52, the forward link comprises channels); each base station transmitting a synchronization signal in a given one of the at least one channel, to remaining base stations within transmission range of each respective base station (Figure 1, Column 5 lines 50 – 52, Column 5 lines 61 – 67, Column 6 lines 1 – 17); and for each base station calculating respective time differences between corresponding signals transmitted by the respective base station and received from respective other base stations within transmission range of the respective base station (Column 6 lines 46 – 52); and

Art Unit: 2684

adjusting timing of the synchronization signals of the respective base station according to calculated time differences (Column 6 lines 46 – 52).

Wallace does not teach providing at least one channel comprising time slots for usage in the plurality of cells and wherein the given one of the at least one channel, by which the synchronization signal is transmitted from each of the plurality of base stations to said remaining base stations, is a random access channel transmitted at a frequency within a band of frequencies that is provided for communications between mobile stations and base stations.

Song teaches providing at least one channel comprising time slots (Figure 23H, Column 22 lines 56 – 58) and wherein the at least one channel is a random access channel transmitted at a frequency within a band of frequencies that is provided for communications between mobile stations and base stations (Figure 23H, Column 22 lines 56 – 58, the wireless system will have a band of frequencies on which to operate, the RACH will be at a particular frequency within said band of frequencies).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the RACH taught by Song as the forward link channel of Wallace thus enabling said pilot symbols to be transmitted and for the purposes of channel estimation and coherent detection as taught by Song.

Regarding Claim 2, Wallace in view of Song teaches all of the claimed limitations recited in Claim 1. Wallace further teaches for each of the plurality of base stations; reporting the time differences calculated to a radio network controller (Column 6 lines 46 – 52, Column 9 lines 49 – 52, this system can be a UMTS system thus the centralized

processor can be the RNC); calculating a synchronizing adjustment corresponding to each base station is calculated from the reported time differences (Column 6 lines 46 – 52); informing each base station individually of the corresponding synchronizing adjustment calculated (Column 6 lines 46 – 52, a synchronizing adjustment will be made in the base stations thus said base stations will be informed of said synchronizing adjustment such that said base stations' timing will be adjusted properly); and synchronizing each base station according to the corresponding synchronizing adjustment (Column 6 lines 46 – 52).

Regarding Claim 3, Wallace in view of Song teaches all of the claimed limitations recited in Claim 1. Wallace further teaches each respective base station acting autonomously on the time differences calculated by adjusting its synchronization to minimize the time differences (Column 6 lines 46 – 52).

Regarding Claim 5, Wallace in view of Song teaches all of the claimed limitations recited in Claim 1. Song further teaches wherein the random access channel comprises a time slot per TDMA frame (Figure 23H).

Regarding Claim 6, Wallace in view of Song teaches all of the claimed limitations recited in Claim 5. Song further teaches wherein the random access channel is allocated to uplink transmissions in order to initiate communications (Column 22 lines 56 – 58).

Regarding Claim 7, Wallace in view of Song teaches all of the claimed limitations recited in Claim 6. Song further teaches wherein communications are initiated by requesting a resource unit for uplink usage (Column 22 lines 56 – 58, when the UE

Art Unit: 2684

wants to access the system a burst (short user packet) is transmitted on the RACH, the burst comprises a code or preamble, there is combination of said code or preamble in one time slot, which is the resource unit).

Regarding Claim 8, Wallace in view of Song teaches all of the claimed limitations recited in Claim 5. Wallace further teaches allocating the utilization of a timing probe for base station synchronization according to a schedule (Column 10 lines 28 – 36).

Popovic further teaches a random access channel time slot (Figure 8A, Column 3 lines 27 – 29, Column 3 lines 45 – 64, the RACH comprises time slots).

Regarding Claim 9, Wallace in view of Song teaches all of the claimed limitations recited in Claim 5. Wallace further teaches using a second channel of said at least one channel to silence uplink communications to allow the transmissions of synchronization transmissions from the first base station to other base stations (Column 10 lines 13 – 27, Column 9 lines 49 – 52, this system can be a UMTS system thus a plurality of channels will be used, the base stations can blank or silence communications so that synchronization can take place). Popovic further teaches random access channel time slots (Figure 8A, Column 3 lines 27 – 29, Column 3 lines 45 – 64, the RACH comprises time slots).

Regarding Claim 10, Wallace in view of Song teaches all of the claimed limitations recited in Claim 9. Wallace further teaches a broadcast control channel (Column 9 lines 49 – 51, this is a UMTS system thus there will be a broadcast control channel).



Art Unit: 2684

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wallace et al. (US 6,590,881) in view of Song (US 6,721,299) as applied to Claim 1 above, and further in view of Wang (US 6,606,309).

Regarding Claim 11, Wallace in view of Song teaches all of the claimed limitations recited in Claim 1. Wallace further teaches synchronizing the plurality of base stations (Column 5 lines 50 – 52, Column 6 lines 46 – 52). Song further teaches wherein the random access channel time slot used is always contained in a fixed numbered frame (Figure 23H).

Wallace in view of Song does not teach the random access channel time slot used is always contained in a fixed numbered frame within a plurality of multi – frames.

Wang teaches a plurality of multi – frames (Column 12 lines 6 – 9, Column 12 lines 64 – 67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the RACH multi – frames taught by Wang in the wireless system of Wallace in view of Song for the purpose of reducing the probability of collisions between access request and short message acknowledgements as taught by Wang.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cedervall et al. (6,134,228) in view of Wallace et al. (US 6,590,881) and in further view of Song (US 6,721,299).

Art Unit: 2684

Regarding Claim 12, Cedervall teaches a method of locating a mobile station within a telecommunications cell forming part of a telecommunications system (Figure 1A, Column 5 lines 54 – 56), the telecommunications cell comprising a base station and at least one mobile station (Figure 1A), the method comprising: determining the location of at least three base stations (Column 5 lines 57 – 67, Column 6 lines 1 – 19); transmitting a signal from the mobile station; receiving the transmitted signal at each of the three base stations (Column 5 lines 57 – 67, Column 6 lines 1 – 19); comparing the received signals with timing signals in each of the base stations; and using the comparison at each base station to determine the location of the mobile station (Column 5 lines 57 – 67, Column 6 lines 1 – 19, lines 32 – 36).

Cedervall does not teach scheduling synchronization measurements for each of the base stations utilizing a random access channel.

Wallace teaches scheduling synchronization measurements for each of the base stations utilizing a forward link channel (Column 5 lines 50 – 52, Column 10 lines 28 – 36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the synchronization method taught above by Wallace in the wireless system of Cedervall as an alternative means for synchronizing the base stations of the wireless system as taught by Wallace.

Cedervall in view of Wallace does not teach scheduling synchronization measurements utilizing a random access channel.

Art Unit: 2684

Song teaches an RACH (See Figure 23H, Column 22 lines 59 – 67, Column 23 lines 1 – 3).


It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the RACH taught by Song as the forward link channel of Cedervall in view of Wallace thus enabling said pilot symbols to be transmitted and for the purposes of channel estimation and coherent detection as taught by Song.

### **Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S. Dean whose telephone number is 571-272-7877. The examiner can normally be reached on 6:00-2:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A. Maung can be reached on 571-272-7882. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raymond S. Dean  
October 26, 2005

**EDAN ORGAD**  
**PATENT EXAMINER/TELECOMM.**

*L.O. 10/29/05*